REMARKS

Applicants have amended claims 1-3, 4-10, and withdrawn claims 3 and 6. Claims 13-24 were previously withdrawn. Claims 1, 2, 4, 5 and 7-12 are thus currently pending reconsideration.

Amendments to the Claims

Claims 1 and 7 are amended to recite "A method for removing contaminants from water by distillation," wherein the method employs a "water distillation unit" and conveys heat output from a thermal cycle engine to the water distillation unit."

These amendments clarify the nature of the claimed invention, as described, on page 2 in the summary of the Invention, lines 14-20:

> In a first embodiment of the invention, there is provided a liquid purification system … One embodiment has a distillation device with a liquid ring pump and fully rotatably housing… and magnets hermetically sealed with the fluid pressure boundary of the distillation system.

and at p. 10 of the application, in the following terms (referencing Figure 1B:

> Alternatively, heat from electrical power generator **800** may be recaptured channeling the engine exhaust into the insulated cavity that surrounds the still, which lies between external housing and the individual still components. In such an embodiment, exhaust blows across a finned exchanger that heats source liquid as it enters evaporator **600**.

Claim 8 has been amended similarly.

Claim 4 has been amended to include the phrase "for removing contaminants from water by distillation" in the preamble, for reasons of clarity.

Claims 2, 3, 5 and 6 have been amended to delete the word "exhaust" in the phrase "wherein the step of conveying ~~exhaust~~ heat output" to bring dependent claims 2, 3, 5 and 6 into conformity with independent claim 1 with respect to the term "heat output".

35 U.S.C. § 112, para. 2 Rejections – Indefiniteness

Claims 3 and 6 have been withdrawn. Applicants therefore request withdrawal of the rejection based on indefiniteness.

35 U.S.C. § 102 (e) Rejections – Anticipation

Claims 1-2, 4-5 and 7-12 are rejected as being anticipated by US 7,036,314 to Hoffjann et al.

Hoffjann teaches that the "exhaust **5** of the high temperature fuel cell **1** is usable in *one of several gas turbines* **8** and possibly also in a stirling engine …" (see col. 5, lines 43-45, emphasis added). Hoffjann goes on to state that "water treatment operations or processes … are performed by using the exhaust or waste heat *of the high temperature fuel cell* or cells" (see id., lines 60-62, emphasis added). Thus, teachings of heat recovery in Hoffjann relate to the exhaust heat of a *fuel cell*, and, indeed, there is no heat input to Hoffjann's heat exchanger from a thermal cycle engine. Stated another way, Hoffjann teaches using external heat from a fuel cell (an auxiliary power unit) not even present in the claimed embodiment, to perform the disclosed water treatment operations or processes.

By way of contrast, amended claims 1, 7 and 8 are recite that heat from a *thermal cycle engine* (not from a fuel cell), a component of the claimed distillation system, is cycled back into the system to conserve energy and used for insulating the head space about a still. Moreover, claim 5 recites that the exhaust heat of a thermal cycle engine is fed back into the system and transferred to source water supplied to the water distillation unit prior to vaporization in a still. Claims 1 and 7 claim a method for removing contaminants from water, comprising (a) driving an electric generator by means of a thermal cycle engine … (b) employing at least a portion of the electrical power capacity of the electric generator for powering a water distillation unit; (c) supplying source water … and (d) conveying heat output *of the thermal cycle engine for supplying heat to the water distillation unit* to reduce the amount of electrical power required to purify the water (emphasis added). Claim 8, directed to the distillation system itself, recites a water purification system comprising (a) a thermal cycle engine … (b) a water distillation unit *powered by the electric generator* (c) an input for receiving source water … and (d) *a conduit for conveying heat output of the thermal cycle engine* to the water distillation unit (emphasis added). Hoffjann does not anticipate the subject matter of the two method claims 1 and 7, because Hoffjann does not teach, or suggest, conveying heat from a thermal cycle engine to a water distillation unit,

Hoffjann teaches conveying heat output from *a fuel cell* to perform the disclosed water purification processes.

Moreover, Hoffjann does not anticipate a system for purifying water as claimed in claim 8, because Hoffjjan does not teach, and does not suggest, a conduit for conveying heat output *of the thermal cycle engine* to the water distillation unit. In none of these cases is there any pertinent teaching in Hoffjann, let alone anticipation. Consequently, Applicants respectfully submit that claims 1-2, 4-5 and 7-12 are not anticipated by the '314 patent, and thus request withdrawal of the 35 U.S.C. § 102(e) anticipation rejections.

35 U.S.C. § 102 (b) Rejections – Anticipation

Claims 1-2, 4-5, 7 and 9-11 are rejected as being anticipated by US 4,776,171 to Perry et al. (hereinafter "the '171 patent").

As disclosed in the '171 patent, the water purifier of the self-contained renewable energy system, and methods of using same, employ a reverse osmosis water purifier (see the description of Figures 1-2 at col. 4, lines 53-55 and the description of Figures 13 and 14 at col. 19, line 50 - "Reverse Osmosis Desalinization System" - through col. 20, line 67). In contrast, as recited in amended claims 1 and 7, the methods of the instant application employ a "water distillation unit" (see actions b – d of claims 1 and 7).

Similarly, amended claim 8 is directed to a system for purifying water *by distillation* comprising *a water distillation unit*, an input for receiving water and a conduit for conveying "heat output of the thermal cycle engine *to the water distillation unit* ...." As was detailed for amended claims 1 and 7 above, amended claim 8 recites a system that comprises a *water distillation unit* for the water treatment operations or processes, not a reverse osmosis water purifier, as taught in the '171 patent.

Moreover, nowhere is there a teaching, or suggestion, for the reverse osmosis water purifier of the '171 patent to be replaced with any other type of water purifier, particularly a water distillation unit. As such, Applicants respectfully submit that claims 1-2, 4-5, 7 and 9-11, directed to a system comprising, or methods using, a water distillation unit, are not anticipated by the '171 patent which requires a reverse osmosis water purifier in the system and methods taught

therein. Therefore, Applicants request withdrawal of the 35 U.S.C. § 102(b) anticipation rejections based on the '171 patent.

35 U.S.C. § 103 (a) Rejections – Obviousness

Claims 1-12 are rejected as being obvious with respect to US 6,536,207 to Kamen et al. (hereinafter "the '207 patent) in view of US 4,776,171 to Perry et al. ("the '171 patent").

The '207 patent to Kamen et al. discloses an auxiliary power system for providing electrical power, not for removing contaminants from water by distillation, as claimed in the instant application, that includes an external combustion engine coupled to a generator, with both being disposed within a housing. The thermal energy generated by the external combustion engine may be used to heat the atmosphere surrounding the housing (see the Abstract of the '207 patent, and throughout the disclosure).

In contrast, the presently claimed invention is directed to methods for removing contaminants from water by distillation, and a water distillation system. In claims 1, 7 and 8 of the instant application, the heat output from the thermal cycle engine is instead used to heat the water purification unit. As detailed above, the '171 patent to Perry et al. discloses a self-contained renewable energy system and methods of use thereof, which employ a reverse osmosis water purifier, not a distillation unit. There is no suggestion in either of the references themselves (the '207 patent or the '171 patent) to combine them. And, if the combination is made, all the elements of amended claims 1, 7 and 8 are not present in the combination of references, and so the systems and methods disclosed in the '207 and '171 patents would require modification to arrive at the presently claimed invention.

But, there is no suggestion in either the references themselves, or the knowledge generally available in the art, to modify the disclosure of the '207 and '171 patents, if so combined, to arrive at methods for removing contaminants from water in an ambient environment wherein the heat output of the thermal cycle engine is used to supply "heat to the water distillation unit", as recited in amended claim 1, or for a water distillation system with the same limitations, as recited in amended claim 8.

Finally, Perry et al. teaches a desalination plant that is designed to generate methanol from syngas produced from H_2 generated by electrolysis of the purified water.. There are even figures of the "island" surrounded by ocean where such a plant would be placed (see Fig. 1).

The stated objectives of the Perry et al. patent are to generate electricity from solar and/or wind power, use that energy to purify/desalinate ocean water by *reverse osmosis*, used the purified water to generate H_2, react the H_2 with CO_2 and CO from a carbonate/catalytic reactor, and produce methanol for fuel (see col. 2, line 3 through col. 3, line 21). Therefore, combination of Kamen with Perry et al. would not result in the presently claimed invention, and would defeat the purpose of Perry et al., which does not support a case of obviousness, since, as pointed out in MPEP § 2143.01 (V) quoting *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

For at least those reasons, Applicants respectfully submit that the pending claims, directed to a method for removing contaminants from water at ambient temperature using heat output from a thermal cycle engine to heat a water distillation unit while preventing heat flow to the ambient environment, are not obvious with respect to the '207 patent , which discloses an auxiliary power system that directs thermal energy from a combustion engine coupled to a generator within a housing to heat the atmosphere surrounding the housing, in view of the '171 patent, which requires a reverse osmosis water purifier. Therefore, Applicants request withdrawal of the obviousness rejections under 35 U.S.C. § 103(b) based on the '270 patent in view of the'171 patent.

Non-Statutory Double-Patenting Rejection

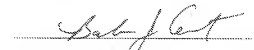
Claims 1-12 are rejected over the claims of either co-pending Application No. 10/713,617 or 10/713,591 in view of Perry et al. Applicants herewith terminally disclaim co-pending applications no. 10/713,617 and 10/713,591, as of the time said applications issue as patents. Therefore, Applicants respectfully request withdrawal of the provisional non-statutory obviousness-type double-patenting rejections based on the 10/713,617 and 10/713,591 applications.

For at least the reasons detailed above, Applicants respectfully submit that all claims presently in the application are believed to be allowable over the art of record and early notice to that effect is respectfully solicited.

It is believed that a three-month extension fee is required; however, if any additional fees are required for the timely consideration of this application, please charge deposit account

number 19-4972. The Examiner is requested to telephone the undersigned if any matters remain outstanding so that they may be resolved expeditiously.

Respectfully submitted,



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February 6, 2007

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